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by
Ross M. G. Norman

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TECHNICAL REPORT SERIES:

SPECIAL STUDY ON THE RELATIONSHIP BETWEEN SOCIAL NETWORKS AND HEALTH PROMOTING BEHAVIORS AND ATTITUDES.

by

ROSS M. G. NORMAN
ST. JOSEPH'S HEALTH CENTRE
LONDON, ONTARIO

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HIGHLIGHTS

- Measures of attitude towards smoking, smoking by spouse and proportion of friends who smoke are all significantly related to the smoking practices of Canadians.

- Attitude towards alcohol consumption and proportion of friends who drink "too much" are predictive of the alcohol consumption of Canadians. People's perceptions of their spouse's drinking behavior are generally not significantly related to their own alcohol consumption.

- Marijuana use by Canadians can be predicted using people's attitude towards marijuana, proportion of friends who use marijuana and use of marijuana by spouse.

- There is a significant correlation bewteen women's perception of the wisdom of frequent breast self-examination and the frequency with which they carry out such exams. Only 52% of women, however, carry out B.S.E. at the actual frequency that they consider desirable.

- There is a modest correlation between regular exercise on the part of spouses and friends and reported rate of exercise by Canadians.

- There is a modest relationship between Canadians' perception of the wisdom of undertaking a change in behavior in order to improve health (e.g., exercise more, lose weight, stop smoking) and their intention to carry out such changes during the coming year.

- When the power of social network variables such as friends' and spouse's behavior are compared with personal attitudes in predicting tobacco and marijuana use by Canadians, the social network variables emerge as more substantial predictors of behavior.

INTRODUCTION

What factors influence Canadians' decisions to engage in various health related behaviors? In the past, most health promotion programs in this country and elsewhere have attempted to promote beneficial changes in behavior by influencing beliefs about the health implications of various courses of action. Such efforts have emphasized the provision of information about the positive benefits of such potentially health promoting behaviors as exercise, a good diet and use of techniques for the early detection of disease, as well as the negative consequences of such health endangering behaviors as smoking, drug abuse, fast driving and excessive alcohol consumption.

This approach is consistent with the best known model of health behavior the Health Belief Model[1,2] which postulates that the likelihood of an individual engaging in a specific health related behavior is primarily related to the person's beliefs about likely threats to his or her health and the perceived effectiveness of the behavior in increasing or decreasing that threat. There have, however, in recent years been many researchers and practitioners within the health promotion area who have questioned the wisdom and appropriateness of such an emphasis on the role of beliefs about health outcomes as determinants of behavior. A recent review of research on the correlates of health behavior showed that beliefs about health outcomes are only one, and not necessarily the most powerful or reliable predictor of health related behavior[3]. For instance, there appears to be at least as much evidence favouring the importance of an individual's perceptions of the behavior of his or her social network (family and friends) in predicting behavior, as there is for the importance of attitudes and beliefs.

A formal model of conscious and deliberate behavior that has gained popularity in recent years is Fishbein's Theory of Reasoned Action. This model suggests that in order to predict behavior, one has to assess attitudes towards the behavior (determined by beliefs about *all* outcomes of the behavior and desirability of these outcomes), beliefs about the expectations of people in an individual's social network concerning the behavior, and motivation to comply with these expectations[4].

Just how important are beliefs about health outcomes and social influences in predicting behavior? Data from Canada's Health Promotion Survey (HPS) provide an important opportunity to examine the importance of attitudes, beliefs and perceived social network behavior in predicting self-reported health promoting behaviors. Data from this survey are of particular interest for two reasons: (1) they provide a rare and valuable opportunity to examine such relationships in a representative national sample; and (2) the beliefs and attitudes measured in

the survey include many of those that are frequently cited on intuitive grounds as being important predictors of health behavior and are, therefore, targeted in health promotion campaigns.

METHOD

It must be recognized that there are important and substantial limitations to the data from the HPS. The three major limitations are: (1) the measures of attitudes, beliefs and social network variables that were included in the survey are *ad hoc*. They do not necessarily reflect the measures recommended by any of the major models of health behavior and may not be those that would show the greatest prediction of health behavior; (2) the measures vary widely in their form and numerical properties which makes it difficult to directly compare their power as predictors of behavior; and (3) the direction of causality of any relationship found will, of course, be ambiguous. With regard to the latter point, we are not in a position to know the extent to which any relationship observed between individuals' behavior and attitudes, or perceptions of the actions of their social network, are a reflection of the behavioral influence of such dispositions or result from an effort to rationalize or justify self-reported behavior.

There are seven areas of the HPS in which it is possible to relate some measures of beliefs, attitudes and/or perceptions of the behavior of friends or family to self-reported behavior. These areas are smoking, alcohol consumption, marijuana use, breast self-examination, monitoring of blood pressure, exercise, and desired changes in behavior. In each case, an examination of the extent of relevant relationships is given, followed by an analysis and then a description of their possible implications for health promotion. The tables presented describe the relationships found for the entire sample of respondents (N = 11,181) as well as for men and women separately. Gender differences are mentioned in the discussion only when they are statistically significant.

SMOKING

The index of smoking behavior was based on responses to questions 27 and 28 (See Appendix for Questionnaire). Those who answered "no" to question 27 ("At the present time do you smoke cigarettes?") were classified as non-smokers (0). Those who answered "yes" to question 27 were then classified as either occassional smokers (1) or regular smokers (2) on the basis of their responses to question 28 ("Do you smoke cigarettes regularly, that is usually everyday or occassionally, not every day?").

Beliefs and Attitudes

In question 31 respondents were asked to indicate the extent of their agreement or disagreement with seven beliefs about smoking. The second, third and seventh items in question 31 indicate a positive attitude towards smoking (e.g., "smoking helps you stay slim") and the other four suggest a negative attitude (e.g., "women should not smoke during pregnancy"). The index of overall attitude was calculated by giving a score of +1 for agreement with a positively worded statement, 0 for "no opinion" and -1 for disagreement with such an item. The reverse procedure was used for scoring agreement and disagreement with negatively worded items. These items were then summed across the seven items comprising question 31. Table 1 shows that the correlation between this composite score of attitude towards smoking and smoking behavior is .29 ($p.<001$). When smoking status is correlated with responses to each individual attitude statement comprising question 31, all are positive and statistically significant (i.e., a range of contingency coefficients between .10 and .23) This finding suggests that the strongest belief or attitudinal predictor of smoking status is the composite score derived from all of the attitude statements comprising question 31.

Social Network

Question 67 was used as an index of social network behavior. This item asked "Of the people you see socially, how many smoke cigarettes?". An answer of "none" was scored 1, "a few" was * scored 2, "about half" was 3, and "most or all" equalled 4. Individuals who indicated that they didn't know how many of their friends smoked were excluded from this analysis. The overall correlation between proportion of friends who smoke and respondent smoking status is .33 ($p.<001$). Whether or not spouse smokes (from question 73) also correlates .33 ($P<.001$) with respondent smoking (See Table 1).

ALCOHOL CONSUMPTION

An eight point scale of alcohol consumption was derived from responses to items 36, 37 and 38. A score of 1 "non-drinker" was given to respondents who answered no to item 36 ("Have you ever taken a drink of beer, wine, liquor or other alcoholic beverage?"); a score of 2 was given if the answer was "yes" to question 36 and no to item 37 ("In the past twelve months have you taken a drink of beer, wine or other alcoholic beverage?"); a score of 3

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* In order to aid comparison of the magnitude of relationships, all contingency coefficients reported are a ratio of the calculated coefficient to the maximum possible coefficient for the variables analysed.

was given for responses of yes to item 36 and 37 and "less often than once a month" to item 38 ("During the past 12 months, how often, on average, did you drink alcoholic beverages? Was it..."); a score of 4 for "yes" to 36 and 37 and "once or twice a month" to 38; a score of 5 for "yes" to 36 and 37 and "Once a week" to item 38; a score of 6 for "yes" to 36 and 37 and "2 3 times a week " to question 38; a score of 7 for "yes" to question 36 and 37 and "4 6 times a week" to 38; and finally a score of 8 for "yes" to 36 and 37 and "Everyday" to item 38. In this way an 8 point scale was derived anchored at one pole by individuals who have never consumed alcohol and on the other pole by those who drink daily.

Beliefs and Attitudes

In a manner analogous to the overall attitude towards smoking score, a composite index of attitude towards alcohol consumption was derived from responses to the five items comprising question 48, which asked each respondent to agree or disagree with five statements regarding alcohol consumption. Of the five beliefs listed in question 48, the first four (e.g., "moderate drinking can be good for your health") were scored as suggesting an attitude supportive of drinking (agree = 1, no opinion = 0, disagree = -1), and the fifth belief was interpreted as implying a non-supportive attitude and was scored in the reverse direction.

Table 2 shows that the correlation of overall attitude towards alcohol consumption and frequency of alcohol consumption is .31 ($p.<001$). As with the smoking scores, the association between frequency of alcohol consumption and the composite index of attitude towards drinking is stronger than for any of the individual statements comprising question 48 (for which correlations vary between .02 and .24).

Question 39 of the survey asked for the highest volume of alcohol consumed on a single day over the past week. Responses to this item were scored on a 1 to 5 scale, 1 indicating no drinks on any of the seven days and 5 indicating a least one day in which 12 or more drinks were consumed. The correlation between this measure and overall attitude towards alcohol consumption is .24 ($p <.001$).

Social Network

Table 2 also shows that the correlation between number of friends who "drink too much" (item 68) and the person's own frequency of consumption is .16 ($p <.001$). The perception of one's spouse as drinking "too much" is not significantly related to a person's own alcohol consumption for men, but there is a significant (but very small) correlation for women (.04).

It should be noted, however, that there is a particular ambiguity associated with any observed relationship between the measures of social network and spousal behavior regarding alcohol consumption on the one hand, and self-reported respondent behavior on the other. Questions 68 and 73 concern acquaintances' and spous tendency to "drink too much". Responding to such a question requires both a perception of frequency of the other person's behavior and a judgement of whether the quantity consumed is "too much". One could postulate that heavy drinking on the part of friends and a spouse could (through social influence) correlate positively with the respondent's own drinking. On the other hand, one could anticipate that little or no drinking by the respondent could be related to use of a more conservative criterion for defining when others are drinking "too much", which would result in the rate of personal drinking correlating negatively with perceptions of the social network and spouse drinking "too much". If both processes are at work, they could counter one another and result in little, if any, correlation. Given this possibility, the conceptual significance of the modest relationship observed between social network measures and alcohol consumption remains ambiguous.

MARIJUANA USE

In question 49 of the questionnaire, respondents were asked to respond "yes" or "no" to the question, "In the past 12 months have you used marijuana or hashish?". Responses to this question were then used as an index of marijuana use (yes = 1; no = 2).

Beliefs and Attitudes

An index of attitude towards marijuana use was composed of responses to questions 50 and 51. In question 50 respondents were asked "Do you think that occassional use of marijuana will affect a person's physical or mental health?". A score of 1 was assigned when the respondent replied "no" or "don't know" to this question. A score of 2 was given for a yes answer to question 50, but no specific effects being checked on question 51. In question 51 respondents were asked "What effects do you think it (marijuana) would have?", and then eight possible effects were listed and space provided for inclusion of other effects. Scores of 3 or more were assigned for a response of "yes" to item 50 and then the number of specific negative effects checked on question 51 being added.

Table 3 shows that the correlation between this index of belief in the negative effects of marijuana and whether or not the respondent has used marijuana in the past twelve months is .15 ($p<.001$).

Social Network

Table 3 also shows that responses to question 69 concerning proportion of friends who use marijuana (question 69) correlates .37 ($p < .001$) with personal use. The correlation coefficient for the relationship between spousal use of marijuana (question 73) and personal use for the sample is even higher at .43 ($p < .001$).

BREAST SELF-EXAMINATION

Results from the two questions asked of women concerning the practice of breast self-examination are particularly interesting because they present an opportunity to examine both the relative and literal consistency between beliefs and behavior. Frequency of practice of breast self-examination was assessed by question 63 ("How often do you examine your own breasts?"). The four possible responses were "At least once a month"; "Once every 2-3 months"; "Less often"; and "Never".

Beliefs and Attitudes

Belief about how frequently a woman should examine her breasts was assessed by question 64 which read "How frequently do you think a woman should examine her own breas*s?". Responses were the same as for question 63 with the addition of a "Don't know" response. The relative consistency between beliefs about the frequency with which a woman should practice BSE and her own actual practice was calculated by a Pearson correlation for the answers to the two questions omitting those who had responded "Don't know" to question 64. The resulting correlation is .47 ($p < .001$), indicating that those who believe in more frequent examinations also tend to engage in this preventive practice. Table 4 reflects the level of literal consistency between believed ideal frequency and actual frequency. Fifty-two percent of women indicate they examine their breasts at exactly the same frequency they believe it is appropriate for all women to do so.

Social Network

No measures of social network variables relevant to breast self-examination were included in the HPS.

BLOOD PRESSURE

In question 18 respondents were asked "When did you last have your blood pressure checked?". The responses were "Last 6 months"; "6-12 months"; "One to two years"; "More than two years"; "Never"; and "Don't know".

Beliefs and Attitudes

In question 22 respondents were asked "Do you agree or disagree with the following statement? You only need to have your blood pressure checked if you think you have a problem." They were allowed to respond "Agree", "Disagree", or "No opinion."

There is a significant relationship between responses to this question and responses to question 18 ($X^2 = 798.8$, d.f. = 10, p.< 001). Table 5 presents the relevant cell percentages for this cross-tabulation. Of those who disagree that blood pressure should be checked only in response to a problem (representing 82% of the sample), fully 78% have had such a check in the previous 12 months, compared to 62% of those who agree (representing 15% of the sample). Unfortunately, we do not know whether any of these reported checks of blood pressure were the direct result of a perceived problem. This leaves considerable uncertainty about what one would expect of the relationship or the meaning of the observed relationship between answers to these questions.

Social Network

No measures of social network variables relevant to blood pressure were included in the HPS.

EXERCISE

Question 24 asked repondents "How many times per week do you exercise for at least 15 minutes?" The response options were "Daily"; "5-6 times a week"; "3-4 times a week"; "Less than once a week"; "Never"; and "Don't know". Those who answered "Don't know" were dropped from further analysis. Other respondents were given a score ranging from 1 to 6 with higher numbers indicating greater exercise frequency.

Beliefs and Attitudes

There were no direct measures of attitude or beliefs concerning exercise. Item 26 did ask about perceived benefits of *increased* exercise, however, such perceptions would not really be expected to show a direct relationship to respondents' current level of exercise.

Social Network

There were two measures of exercise for respondents social network. Table 6 shows that the reported proportion of friends who exercise regularly (question 70) has a correlation of .26 ($p<.001$) with self-reported exercise. Reports of exercise by a spouse (question 73) has a correlation of .24 ($p <.001$) with frequency of personal exercise behavior.

INTENTIONS TO CHANGE

The final set of data do not concern behavior, but rather behavioral intention. In question 109 respondents were asked to indicate their intentions for behavioral change within the next year. In question 4 at the beginning of the survey respondents were asked what they felt was the most important thing that they should do to improve their health. Cross tabulations were performed to assess the extent to which respondents who at the beginning of the survey checked a particular behavior change as important for health improvement were also likely to indicate an intention to make that change within the next year. Table 7 presents relevant contingency coefficients.

Exercise

Of those who indicate that they feel increased exercise is the most important change that they could make, 50% also indicate an intention to increase exercise, in comparison to 21% of other respondents ($C = .41$, $p<.001$).

Weight Loss

Just over 50% of those who think that weight loss is the most important thing that they could do, also indicate an intention to lose weight, in comparison to only 9.1% of other respondents ($C = .42$, $p<.001$).

Improve Eating Habits

Thirty-three percent of those saying that it is most important to improve their eating habits also intend to do so in the coming year, compared to 11 % of other Canadians ($C = .24$, $p<.001$).

Stop Smoking

Of those who feel that it was most important to stop smoking, 54% indicate an intention to do so, compared with 6% of other respondents ($C = .60$, $p<.001$).

Reduce Drug Use

There are only a small number of people who indicate that reduction in drug use was their most important priority. Of these, 37% say that they intend to do so in the next year in comparison to less than 1% of others ($C = .29$, $p<.001$). Although the magnitude of the relationship is greater for men than women, the small numbers indicating a priority for reduced drug use makes such comparisons unreliable.

Reduce Alcohol Consumption

Of the people who say that the most important priority is reduction in alcohol, 15% say that they intend to do so in the next year in comparison to less than 1% of other respondents ($C = .13$, $p < .001$).

DIRECT COMPARISONS OF ATTITUDE AND SOCIAL NETWORK PREDICTORS OF BEHAVIOR

There are two areas in which it is possible to make a comparison of the relative importance of attitudes or beliefs and social network variables as predictors of behavior. These areas are smoking and marijuana use. Although both attitude and social network measures are available regarding alcohol consumption, as discussed earlier, there is confusion regarding the relationship one would expect to find between the social network measures relevant to alcohol consumption and behavior. For this reason, no attempt was made to directly compare the predictive power of attitude and social predictors of alcohol consumption. Only measures related to smoking and marijuana use provide an opportunity to assess the relative importance of these two types of predictors.

In order to assess the comparative power of predictors of smoking and marijuana use, the measures of attitude, behavior of friends and spousal behavior were used as predictors in multiple regression analyses, with a hierarchical procedure. Each measure followed the form outlined in the previous sections on smoking and marijuana use. Tables 10 and 11 present the means and standard deviations for the measures of attitude, spousal behavior and behavior of friends for each category of smoking behavior and marijuana use, respectively.

Multiple regression is a statistical tool for evaluating the relationship of one or more predictor variables to a single criterion variable. This analytic approach is most often used to assess which predictor variables are important and which are not for describing or predicting a criterion variable. The hierarchical regression procedure consists of successive comparisons of the ordering of the predictor variables in the regression equation, so as to determine the best predictor variables. In this case, we are interested in determining whether smoking behavior and marijuana use are better predicted by attitudes or the behavior of family and friends. By comparing changes in the multiple correlation (R) as a result of differing the order of the predictor variables in the regression equation one can accurately assess the independent contribution of each of the predictor variables.

The results of the hierarchical multiple regression analysis for the prediction of tobacco smoking are presented in Table 8. While each of the three predictor variables contributes to the prediction of smoking behavior, overall the more important predictors appear to be the social network variables. In the case of the entire sample, the

increment in R^2 when the attitude measure is entered into the regression equation after the measures of smoking by friends and spouse is only .04 (or 4% of the explained variance in smoking). When this order is reversed, however, the measures of friends and spouses smoking behavior increases R^2 a further .12 (or 12%), over and above that predicted by the attitude measure alone. As shown in Table 8, this same pattern holds when the regressions for men and women are calculated separately.

Table 9 presents the results of the same type of hierarchical regression analyses for the prediction of marijuana use. The pattern is the same for men and women combined as for each gender separately. Each of the three predictors contributes to the prediction of marijuana use, but the social network variables appear to be the more important predictors. As with smoking behavior, friends and spousal use of marijuana contributes substantially to the prediction of marijuana smoking, over and above that which can be predicted by attitude towards marijuana use (Change in $R^2 = .21$). On the other hand, attitude towards marijuana use does not contribute substantially to the prediction, after use by spouse and friends are entered in the regression equation (Change in $R^2 = .004$).

CONCLUSIONS

Most of the relationships reported are highly significant statistically and this is not surprising given the large sample involved (N=11,181). Most of the significant relationships are, however, of modest to moderate magnitude which suggests that the belief measures and social network measures included in the HPS are not very strong predictors of relevant health behaviors. Of course, the measures of attitude and social influence used in the survey are not necessarily the most effective for predicting behavior. For instance, the Fishbein Theory of Reasoned Action which has often found to be one of the most effective models for the prediction of deliberate action calls for more precise and standardized measures than those included in this survey. If measures more consistent with the Fishbein model were used, it might be that social network variables and attitudes/beliefs would be better predictors of health behavior. On the other hand, the current survey format may have resulted in social pressures on respondents for post hoc justification of their behavior, which could result in a higher correlations of reported beliefs and social perceptions with behavior than are an accurate reflection of the influence of the former upon the latter.

Despite uncertainties associated with interpreting the absolute magnitude of the relationships found, the relative importance of attitudinal/belief measures in comparison to the behavior of one's social network in predicting behavior is worth noting. The data from the HPS suggest the need to give at least as much weight to social network characteristics, as to beliefs about health outcomes, in planning health promotion activities. A broader review

of the literature on correlates of health behavior has suggested the same conclusion.[3] Such findings imply that interpersonal influence through modelling and changes in informal norms can be important levers for behavioral health promotion. We must recognize that the choice of healthy behavior is a social act. Health promotion campaigns could ask individuals to maximize their own health behavior and in addition to encourage others to do the same. People could be encouraged to undertake dietary changes, physical activity programs and other changes within social groups. Until recently, the use of interpersonal pressures in health promotion has been largely neglected, and there have been few evaluations of the effectiveness of such an approach.

Another implication of the importance of social network characteristics is that health promotion may sometimes need to focus on helping people resist social and family pressures to overeat, drink too much, smoke, etc.. One area in which such an approach has been used successfully is in the prevention of adolescent smoking.[6,7.]

In summary, the results of the HPS add further weight to arguments for trying to influence health related behavior not just through changing individual's beliefs about health outcomes, but also by creating a social environment which is more conducive to health promoting actions.

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Tables

Table 1. Pearson Correlations Between Smoking Behaviour and Attitude Towards Smoking, Smoking by Spouse and Smoking by Friends, Age 15+, Canada, 1985.

	Smoking Behaviour of		
Variable	Both Sexes	Men	Women
Attitude Towards Smoking	.29	.29	.29
Smoking by Friends	.33	.33	.34
Smoking by Spouse	.33	.37	.29

Note: Positive correlations denote that a more positive attitude towards smoking, a higher proportion of friends smoking and a spouse who smokes are all associated with more smoking by Canadians.

Table 2. Pearson Correlations Between Alcohol Consumption and Attitude Towards Alcohol Consumption, Drinking by Spouse and Drinking by Friends, Age 15+, Canada,1985.

	Alcohol Consumption by		
Variable	Both Sexes	Men	Women
Attitude Towards Drinking	.31	.29	.27
Proportion of Friends Drinking "Too Much"	.16	.16	.13
Spouse Drinking "Too Much"	.01	.00	.04

Note: Positive correlations denote that a more positive attitude towards drinking, and drinking too much by friends and/or spouse are all associated with more drinking by Canadians.

Table 3. Pearson Correlations Between Use Of Marijuana and Attitude Towards Marijuana Use, Marijuana Use by Spouse and Marijuana Use by Friends, Age 15+, Canada, 1985.

	Use of Marijuana by		
Variable	Both Sexes	Men	Women
Attitude Towards Marijuana	.15	.19	.11
Friends' Use of Marijuana	.37	.39	.35
Spouse's Use of Marijuana	.43	.43	.48

Note: Positive correlations denote that a more positive attitude towards marijuana use, a higher proportion of friends using marijuana, and marijuana use by spouse are all associated with marijuana use by respondents.

Table 4. Relationship Between Canadian Women's Belief About How Often Women Should Examine Their Breasts and Reported Frequency of Breast Self-examination, Age 15+, Canada, 1985.

	Believed Optimum Rate			
	Once a month	Once 2-3 months	Less often	Never
Actual Frequency of Breast Self-Examination				
Once a Month	43.0%	0.7%*	–	–
Once 2-3 Months	15.4%	5.8%	0.5%	–
Less Often	12.4%	3.5%	2.1%	–
Never	9.9%	2.9%	2.7%	0.7%*

Note: * Data to be used with caution because of high sampling variability.
– Data not releasable as coefficient of variation exceeds 33.3%.

Table 5. Relationship Between Belief That Blood Pressure Only Needs To Be Checked If You Have A Problem and Last Time Blood Pressure Was Checked, Age 15+, Canada, 1985.

	Response to Item: "Blood pressure should only be checked if youthink you have a problem."		
	Agree	Disagree	No Opinion
Last time blood pressure was checked:			
Last 6 Months	7.3%	48.7%	0.9%
6-12 Months	2.3%	15.9%	0.3%*
1-2 Years	1.9%	8.8%	0.3%*
More than 2 Years	2.6%	6.7%	0.3%*
Never	0.7%*	1.2%	–
Don't know	0.5%*	1.2%	–

Note: * Data to be used with caution because of high sampling variability.
– Data not releasable as coefficient of variation exceeds 33.3%.

Table 6. Pearson Correlations Between Frequency of Exercise and the Exercise Frequency of Friends and Spouse, Age 15+, Canada, 1985.

Variable	Exercise Behavior of		
	Both Sexes	Men	Women
Exercise by Friends	.26	.30	.21
Exercise by Spouse .	.24	.20	.28

Note: Positive correlations denote that a higher proportion of friends who exercise and a spouse who exercises are both associated with greater frequency of exercise by Canadians.

Table 7. Contingency Coefficients for Relationship Between Perceived Importance of Changes in Behaviour and Intentions to Make Changes Within One Year, Age 15+, Canada, 1985.

	Intentions to change by Perceived Importance of Behavioural Change		
	Both Sexes	Men	Women
Exercise More	.41	.41	.41
Lose Weigh	.42	.37	.43
Improve Eating Habits	.24	.23	.24
Stop Smoking	.60	.58	.63
Reduce Drug Use	.29*	.48*	.00*
Reduce Alcohol Consumption	.13	.13	.06

Note: All reported coefficients are positive indicating a higher perceived importance is associated with a greater intention to change.

* Actual counts in sample are small. Use estimates with caution.

Table 8. Hierarchical Multiple Regression Analysis of Smoking Behavior, by Sex, Age 15+, Canada, 1985.

	Criterion: Smoking Behavior		
	R	R^2	Change in R^2
Both Sexes			
Regression A:			
Step 1 Friends' & Spouse's Smoking	.40	.16	–
Step 2 Attitude Towards Smoking	.45	.20	.04
Regression B:			
Step 1 Attitude Towards Smoking	.29	.08	–
Step 2 Friends' & Spouse's Smoking	.45	.20	.12
Men			
Regression A:			
Step 1 Friends' & Spouse's Smoking	.43	.18	–
Step 2 Attitude Towards Smoking	.47	.22	.04
Regression B:			
Step 1 Attitude Towards Smoking	.29	.08	–
Step 2 Friends' & Spouse's Smoking	.47	.22	.14
Women			
Regression A:			
Step 1 Friends' & Spouse's Smoking	.39	.15	–
Step 2 Attitude Towards Smoking	.44	.19	.04
Regression B:			
Step 1 Attitude Towards Smoking	.29	.08	–
Step 2 Friends' & Spouse's Smoking	.44	.19	.11

Table 9. Hierarchical Multiple Regression Analysis of Marijuana Use, by Sex, Age 15+, Canada, 1985

	Criterion: Marijuana Use		
	R	R^2	Change in R^2
Both Sexes			
Regression A:			
Step 1 Use by Friends & Spouse	.48	.23	–
Step 2 Attitude Towards Marijuana Use	.48	.23	.004
Regression B:			
Step 1 Attitude Towards Marijuana Use	.15	.02	–
Step 2 Use by Friends & Spouse	.48	.23	.21
Men			
Regression A:			
Step 1 Use by Friends & Spouse	.52	.27	–
Step 2 Attitude Towards Marijuana Use	.53	.28	.01
Regression B:			
Step 1 Attitude Towards Marijuana Use	.19	.04	–
Step 2 Use by Friends & Spouse	.53	.28	.24
Women			
Regression A:			
Step 1 Use by Friends & Spouse	.49	.24	–
Step 2 Attitude Towards Marijuana Use	.49	.24	.002
Regression B:			
Step 1 Attitude Towards Marijuana Use	.11	.01	–
Step 2 Use by Friends & Spouse	.49	.24	.23

Table 10. Means and Standard Deviations for Measures of Attitude Towards Smoking, Friends' Smoking and Spouse's Smoking, Age 15+, Canada, 1985.

	Attitude		Friends		Spouse	
	mean	s.d.	mean	s.d.	mean	s.d.
Both Sexes:						
Non-smoker	-4.04	2.45	2.30	0.81	1.23	0.42
Occasional	-3.36	2.46	2.65	0.79	1.49	0.50
Regular	-2.38	2.64	2.93	0.84	1.56	0.50
Men:						
Non-smoker	-3.86	2.52	2.35	0.82	1.18	0.38
Occasional	-3.29	2.56	2.70	0.86	1.49	0.50
Regular	-2.10	2.84	2.97	0.82	1.55	0.50
Women:						
Non-smoker	-4.23	2.38	2.25	0.81	1.28	0.45
Occasional	-3.45	2.36	2.60	0.71	1.51	0.50
Regular	-2.66	2.38	2.89	0.85	1.59	0.49

Note: A higher score on the attitude measure indicates a more positive attitude towards smoking, a higher score on friends indicates more friends who smoke, and a higher score on spouse indicates more likelihood of spouse smoking.

Table 11. Means and Standard Deviations for Measures of Attitude Towards Marijuana, Friends' and Spouse's Use of Marijuana, Age 15+, Canada, 1985.

	Attitude		Friends		Spouse	
	mean	s.d.	mean	s.d.	mean	s.d.
Both Sexes:						
User/past 12 mths	1.60	1.01	1.70	0.99	1.54	0.50
Non-user/12 mths	2.83	1.39	2.83	0.45	1.98	0.13
Men:						
User/past 12 mths	1.41	0.90	1.70	1.03	1.69	0.46
Non-user/12 mths	2.74	1.34	2.81	0.45	2.00	0.08
Women:						
User/past 12 mths	1.90	1.10	1.68	0.95	1.31	0.47
Non-user/12 mths	2.91	1.44	2.84	0.45	1.97	0.16

Note: A higher score on the attitude measure indicates a more negative attitude towards marijuana use, a higher score on the friends measure indicates fewer friends who use marijuana, and a higher score on the spouse measure indicates less likelihood of spouse using marijuana.

Health Promotion Survey Questionnaire

Statistics Canada Statistique Canada

HEALTH PROMOTION SURVEY

Telephone Number — Hrd Page – Line No

First I would like to ask you a few questions about your health.

1. **In general, compared to other persons your age would you say your health is . . .**

   [1] Excellent
   [2] Very good
   [3] Good
   [4] Fair
   [5] Poor

2. **Do you agree or disagree with the following statement? Compared to most people my age I make more of an effort to improve my health.**

   [6] Agree
   [7] Disagree
   [8] No opinion

3. **Do you think there is anything you personally should do to improve your physical health?**

   [1] Yes [2] No → Go to 6

4. **What is the most important thing you personally should do?**

   [3] Exercise more
   [4] Improve eating habits
   [5] Lose weight
   [6] Stop smoking
   [7] Reduce drug use/medications
   [8] Cut down on drinking
   [9] Other (specify) _____

5. **Is there anything stopping you from making this improvement?** (Mark all that apply)

   [01] No
   [02] Problem not serious, no urgency
   [03] Lack of time
   [04] Lack of self discipline, energy
   [05] Too depressed
   [06] Don't know how to get started, lack knowledge
   [07] Peer pressure
   [08] Lack of support from family or friends
   [09] Don't want to change current habits
   [10] Too difficult
   [11] Too costly
   [12] Other (specify) _____

6. **Do you think there is anything you personally should do to improve the way you cope with stress?**

   [1] Yes [2] No → Go to 9

7. **What is the most important thing you think you should do?** (Mark only most important)

   [1] Exercise more
   [2] Learn to relax, worry less
   [3] Get out more often, make new friends, socialize
   [4] Change jobs, move, leave home, change situation
   [5] Reduce drug use/medications
   [6] Reduce alcohol use
   [7] Spend more time with family and close friends
   [8] Other (specify) _____

8. **Is there anything stopping you from making this improvement?**

   [01] No
   [02] Problem not serious, no urgency
   [03] Lack of time
   [04] Lack of self discipline, energy
   [05] Too depressed
   [06] Don't know how to get started, lack knowledge
   [07] Peer pressure
   [08] Lack of support from family or friends
   [09] Don't want to change current habits
   [10] Too difficult
   [11] Too costly
   [12] Other (specify) _____

9. **In general would you say you're . . .**

   [1] Very happy
   [2] Pretty happy
   [3] Not too happy

10. **Would you describe your life as . . .**

    [4] Very stressful
    [5] Fairly stressful
    [6] Not very stressful
    [7] Not at all stressful

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11. **Are there health topics about which you feel you need more information?**

[8] ○ Yes [9] ○ No ——→ Go to 13

12. **On which of the following health topics do you feel you need more information?**

	Yes	No
Nutrition	01 ○	02 ○
High blood pressure	03 ○	04 ○
Mental health	05 ○	06 ○
Smoking	07 ○	08 ○
Alcohol	09 ○	10 ○
Marijuana	11 ○	12 ○
Safety and accident prevention	13 ○	14 ○

The next few questions are about your current physical condition.

13. **How tall are you without shoes?**

[1] [ ] [ ] feet / inches or [2] [ ] [ ] [ ] centimetres

14. **How much do you weigh?**

[3] [ ] [ ] [ ] pounds or [4] [ ] [ ] [ ] kilograms

15. **How much would you like to weigh?**

[5] [ ] [ ] [ ] pounds or [6] [ ] [ ] [ ] kilograms

[7] ○ Don't know

16. **Are you limited in the kind or amount of activity you can do because of a long term physical condition or health problem? By long term I mean a condition that has lasted or is expected to last more than 6 months.**

[1] ○ Yes [2] ○ No ——→ Go to 18

17. **Are your activities limited . . .**

	Yes	No
At home	[3] ○	[4] ○
At work or school	[5] ○	[6] ○
In other activities such as leisure time pursuits or transportation to or from work	[7] ○	[8] ○

18. **When did you last have your blood pressure checked?**

[1] ○ Last 6 months
[2] ○ 6-12 months
[3] ○ One to two years
[4] ○ More than 2 years
[5] ○ Never
[6] ○ Don't know } Go to 22

19. **As far as you know is your blood pressure high?**

[7] ○ Yes
[8] ○ No
[9] ○ Don't know } Go to 22

20. **Are you currently doing anything to control your blood pressure?**

[1] ○ Yes [2] ○ No ——→ Go to 22

21. **What are you doing?** (Mark all that apply)

01 ○ Medication
02 ○ Quit smoking
03 ○ Exercise
04 ○ Weight loss
05 ○ Sodium restriction
06 ○ Other diet change
07 ○ Relaxation
08 ○ Reduce alcohol use
09 ○ Other (specify) _____
10 ○ Don't know

22. **Do you agree or disagree with the following statement? You only need to have your blood pressure checked if you think you have a problem.**

[1] ○ Agree
[2] ○ Disagree
[3] ○ No opinion

The next few questions are about exercise.

23. **Exercise includes vigorous activities such as calisthenics, jogging, racquet sports, team sports, dance classes, or brisk walking. Do you feel you get as much exercise as you need or less than you need?**

[4] ○ As much as needed
[5] ○ Less than needed
[6] ○ Don't know

24. **How many times per week do you exercise for at least 15 minutes?**

[1] ○ Daily
[2] ○ 5-6 times a week
[3] ○ 3-4 times a week
[4] ○ 1-2 times a week
[5] ○ Less than once a week
[6] ○ Never
[7] ○ Don't know

25. **Would you say you are physically more active, about the same or less active than other persons your age?**

[1] ○ More active
[2] ○ About the same
[3] ○ Less active
[4] ○ Don't know

26. Do you think that getting more exercise would improve your health...

[5] A great deal
[6] A moderate amount
[7] A little
[8] Not at all
[9] Don't know

The next few questions are about smoking.

27. At the present time do you smoke cigarettes?

[1] Yes [2] No → Go to 31

28. Do you smoke cigarettes regularly, that is usually everyday or occasionally, not every day?

[3] Regularly [4] Occasionally

29. In the past year has anyone asked you to not smoke around them?

[5] Yes [6] No → Go to 31

30. Where has this happened? Anywhere else? (Mark all that apply)

[1] At school
[2] At work
[3] In a car
[4] Restaurant
[5] In your own home
[6] In a house other than your own
[7] Other (specify) _____

31. Now I'd like your opinion on some statements about smoking. Tell me whether you agree or disagree with each of the following?

	Agree	Dis-agree	No opinion
Children are more likely to start smoking if their parents smoke	[01]	[02]	[03]
People are too concerned about the effect on their health of other people smoking	[04]	[05]	[06]
Most non-smokers don't mind when people smoke in their presence	[07]	[08]	[09]
Women should not smoke during pregnancy	[10]	[11]	[12]
Non-smokers should be provided with a smoke-free area where they work	[13]	[14]	[15]
Smokers should ask permission before smoking in the presence of others	[16]	[17]	[18]
Smoking helps you stay slim	[19]	[20]	[21]

32. Do you think that a person who quits after ten years of heavy smoking reduces the risk of getting a disease related to smoking...

[1] A great deal
[2] A moderate amount
[3] A little bit
[4] Not at all
[5] Don't know

33. Do you ever feel unpleasant effects from the cigarette smoke of others?

[6] Yes [7] No

34. Have you ever asked someone not to smoke?

[8] Yes [9] No → Go to 36

35. Where was that? Anywhere else? (Mark all that apply)

[1] In restaurant
[2] At work
[3] At school
[4] In a car
[5] Public transportation (bus, airplane)
[6] In your own home
[7] In a house other than your own
[8] Other (specify) _____

Now I would like to ask some questions about alcohol consumption.

36. In the next questions when we use the word drink it means:

One bottle of beer or glass of draft
One small glass of wine
One shot or mixed drink with hard liquor

Have you ever taken a drink of beer, wine, liquor or other alcoholic beverage?

[1] Yes [2] No → Go to 44

37. In the past 12 months, have you taken a drink of beer, wine, liquor or other alcoholic beverage?

[3] Yes [4] No → Go to 44

38. During the past 12 months, how often, on average, did you drink alcoholic beverages? Was it...

[1] Every day
[2] 4-6 times a week
[3] 2-3 times a week
[4] Once a week
[5] Once or twice a month
[6] Less often than once a month

39. (a) **Thinking back over the past 7 days, on how many of these days did you have any alcoholic drinks?**

☐ 88 ○ None ——→ Go to 40

(b) **On how many of these days did you have 3 or more drinks?**

☐ 88 ○ None ——→ Go to 40

(c) **On how many of these days did you have 4 or more drinks?**

☐ 88 ○ None ——→ Go to 40

(d) **On how many of these days did you have 8 or more drinks?**

☐ 88 ○ None ——→ Go to 40

(e) **On how many of these days did you have 12 or more drinks?**

☐ 88 ○ None

40. **Would you say that this is more, less or about the same amount that you usually consume during a week?**

1 ○ More
2 ○ Less
3 ○ Same

41. **During the past month how many times have you driven within two hours after drinking any amount of alcohol?**

☐,☐

88 ○ Don't drive ——→ Go to 44
99 ○ Don't know

42. **About how many drinks can <u>you</u> have, over a 3 hour period, before <u>you</u> would worry about your ability to drive?**

☐,☐

99 ○ Don't know

43. **There is a legal limit to the amount of alcohol <u>you</u> can have in your blood when driving. How many drinks do you think <u>you</u> can have over a period of three hours before you are over the legal limit?**

☐,☐

99 ○ Don't know

44. **In the past 12 months, have you been with a friend or relative whom you thought had too much to drink to drive safely?**

5 ○ Yes
6 ○ No
7 ○ Don't know } Go to 47

45. **On the most recent occasion did you attempt to prevent this person from driving?**

8 ○ Yes 9 ○ No ——→ Go to 47

46. **What did you do? (Mark all that apply)**

1 ○ Drove them home yourself
2 ○ Asked someone to drive them home
3 ○ Asked them to take a taxi
4 ○ Hid their car keys
5 ○ Served coffee
6 ○ Kept the person at your home
7 ○ Other (specify) _____

47. **How many drinks do you think a person can have per week, without endangering his/her health over the long term?**

☐,☐

99 ○ Don't know

48. **Now I'd like your opinion on some statements about drinking. Please tell me, whether you agree or disagree?**

	Agree	Dis-agree	No opinion
Moderate drinking can be good for your health	01 ○	02 ○	03 ○
On social occasions I often feel obligated to have a drink, even when I would rather not	04 ○	05 ○	06 ○
Most drinkers do not suffer health problems as a result of their drinking	07 ○	08 ○	09 ○
Most people don't mind if you get intoxicated once in a while	10 ○	11 ○	12 ○
I'd rather pay for a taxi than see a friend drive after drinking	13 ○	14 ○	15 ○

Now I would like to ask about your use of drugs.

49. **In the past 12 months have you used:**

Sleeping pills?	01 ○	Yes
	02 ○	No
Pep pills, stimulants?	03 ○	Yes
	04 ○	No
Tranquilizers such as valium?	05 ○	Yes
	06 ○	No
Cocaine?	07 ○	Yes
	08 ○	No
Marijuana or hashish?	09 ○	Yes
	10 ○	No

50. **Do you think that occasional use of marijuana will affect a persons' physical or mental health?**

4 ○ Yes
5 ○ No
6 ○ Don't know } Go to 52

51. What effects do you think it would have? (Mark all that apply)

- 01 ○ Relaxation or other positive effects
- 02 ○ Addiction/leads to harder drugs
- 03 ○ Memory loss, brain damage
- 04 ○ Other mental or behavioral effects
- 05 ○ Lung damage
- 06 ○ Genetic problems/sterility
- 07 ○ Other physical health problems
- 08 ○ Increase/risk of accidents or injury
- 09 ○ Other (specify) _____
- 10 ○ Don't know

The next few questions are about safety.

52. On average, about how many miles or kilometres per week do you travel in a private vehicle . . .

As a driver?

1 ☐☐☐☐☐ miles or 2 ☐☐☐☐☐ kilometres

- 3 ○ Don't know

53. On average, about how many miles or kilometres per week do you travel in a private vehicle . . .

As a passenger?

4 ☐☐☐☐☐ miles or 5 ☐☐☐☐☐ kilometres

- 6 ○ Don't know

54. How often do you use seatbelts when you ride in a car? (Read responses)

- 1 ○ Always
- 2 ○ Most of the time
- 3 ○ Sometimes
- 4 ○ Rarely or never

55. When you are driving a car do you insist that the children with you have their seatbelt fastened or are in carseats? (Read responses)

- 1 ○ Always
- 2 ○ Most of the time
- 3 ○ Sometimes
- 4 ○ Rarely or never
- 5 ○ Don't drive
- 6 ○ Don't drive with children in car

56. In the past 3 years have you taken any training to administer first aid?

- 7 ○ Yes
- 8 ○ No

57. Can you administer cardio-pulmonary resuscitation, sometimes called CPR?

- 1 ○ Yes
- 2 ○ No

58. Would you agree or disagree with the following statement? It is worth learning CPR even though few people ever have to use it.

- 3 ○ Agree
- 4 ○ Disagree
- 5 ○ No opinion

59. Do you have the following in your home?

	Yes	No
A first aid kit	1 ○	2 ○
A smoke detector	3 ○	4 ○
A fire extinguisher	5 ○	6 ○

60. Interviewer check item

Respondent is: Female 7 ○ → Go to 61
Male 8 ○ → Go to 66

The next questions are about health practices.

61. In the past 12 months have you had your breasts examined by a doctor or nurse?

- 1 ○ Yes
- 2 ○ No

62. Have you ever been shown how to examine your breasts?

- 3 ○ Yes
- 4 ○ No

63. How often do you examine your own breasts? Would you say . . .

- 5 ○ At least once a month
- 6 ○ Once every 2-3 months
- 7 ○ Less often
- 8 ○ Never

64. How often do you think a woman should examine her own breasts?

- 1 ○ At least once a month
- 2 ○ Once every 2-3 months
- 3 ○ Less often
- 4 ○ Never
- 5 ○ Don't know

65. When was the last time you had a PAP smear test for cancer ?

- 1 ○ Within the past year
- 2 ○ Last 2-3 years
- 3 ○ More than 3 years
- 4 ○ Never
- 5 ○ Don't know

The next few questions are about social relationships.

66. About how many people, including relatives, do you consider to be your friends, that is, people you see socially on a regular basis?

☐

67. Of the people you see socially how many smoke cigarettes? (Read responses)

1○ None
2○ A few
3○ About half
4○ Most or all
5○ Don't know

68. How many would you say drink too much? (Read responses)

1○ None
2○ A few
3○ About half
4○ Most or all
5○ Don't know

69. How many of your friends use marijuana regularly? (Read responses)

1○ None
2○ A few
3○ About half
4○ Most or all
5○ Don't know

70. How many of your friends exercise regularly? (Read responses)

1○ None
2○ A few
3○ About half
4○ Most or all
5○ Don't know

71. How many do you consider to be your close friends, that is, people you could talk to if you needed help or had a problem? (Read responses)

1○ None
2○ A few
3○ About half
4○ Most or all
5○ Don't know

72. What is your current marital status?

1○ Married (including common-law)
2○ Single/never married
3○ Separated
4○ Divorced
5○ Widowed

→ Go to 74

73. Does your spouse do any of the following?

	Yes	No
Exercise regularly	01○	02○
Smoke cigarettes	03○	04○
Drink too much	05○	06○
Overeat	07○	08○
Use tranquilizers such as valium	09○	10○
Smoke marijuana	11○	12○

The next questions are about nutrition.

74. In the last week on how many days did you have the following for breakfast?

Nothing or just coffee or tea ☐
Eggs, bacon, ham or other meat ☐
Breads, pastries, pancakes or cereals ☐
Fruit or juice ☐
Cheese, milk or other dairy products ☐

75. Are there any foods which you think you should limit or avoid, for the sake of your health?

1○ Yes 2○ No → Go to 77

76. Of the following types of food, which one do you feel is the most important to limit or avoid for the sake of your health? Food that is...

3○ High in cholesterol
4○ High in fat
5○ High in sugar
6○ High in salt
7○ Don't know

77. Are there any foods which you think you should eat more often for the sake of your health?

8○ Yes 9○ No → Go to 79

78. Of the following types of food, which one do you feel is the most important to eat more often for the sake of your health? Foods such as...

1○ Fruits and vegetables
2○ Whole grain cereals
3○ Milk and milk products
4○ Meat/fish/poultry
5○ Don't know

79. I will now read a list of health topics. For each one I'd like your opinion about how important you feel it is for the government to deal with each topic. Tell me on a scale from 1 to 10; with 1 being not at all important and 10 being extremely important.

	Not at all important 1	2	3	4	5	6	7	8	9	*Extremely important* 10	*Don't know*
Drug use	01○	02○	03○	04○	05○	06○	07○	08○	09○	10○	11○
Smoking	12○	13○	14○	15○	16○	17○	18○	19○	20○	21○	22○
Alcohol problems	23○	24○	25○	26○	27○	28○	29○	30○	31○	32○	33○
High blood pressure	34○	35○	36○	37○	38○	39○	40○	41○	42○	43○	44○
Child health	45○	46○	47○	48○	49○	50○	51○	52○	53○	54○	55○
Eating habits	56○	57○	58○	59○	60○	61○	62○	63○	64○	65○	66○
Mental health	67○	68○	69○	70○	71○	72○	73○	74○	75○	76○	77○
Accident prevention in the home	78○	79○	80○	81○	82○	83○	84○	85○	86○	87○	88○
Accident prevention at work	89○	90○	91○	92○	93○	94○	95○	96○	97○	98○	99○
Accident prevention on the road	100○	101○	102○	103○	104○	105○	106○	107○	108○	109○	110○

80. Do you agree or disagree with the following statements?

	Agree	Dis-agree	No opinion
Following a healthy diet is expensive and time consuming	1○	2○	3○
I'd rather be overweight than have to give up many of the foods I like	4○	5○	6○
Skipping breakfast is an effective way to control or reduce your weight	7○	8○	9○

81. Do you think that you could improve your health by changing your eating habits?

1○ Yes
2○ No
3○ Don't know

Finally a few questions about yourself.

82. What is the highest grade or level of education you have ever completed?

1○ No schooling
2○ Elementary
3○ Some } Secondary
4○ Completed }
5○ Some } Community college, technical college, CEGEP, nurse's training
6○ Completed }
7○ Some } University or teacher's college
8○ Completed }
9○ Other education or training

83. What language do you speak at home most often?

1○ English
2○ French
3○ Other

84. What is the postal code for this dwelling?

☐☐☐ ☐☐☐ 4○ Don't know

85. How many telephones, counting extensions, are there in your dwelling?

1○ One ——→ Go to 90
2○ Two or more

86. Do all the telephones have the same number?

3○ No
4○ Yes ——→ Go to 90

87. How many different numbers are there?

☐☐

88. Are any of these numbers for business use only?

5○ No ——→ Go to 90
6○ Yes

89. How many are for business use only?

☐☐

90. Which of the following best describes your main activity during the last 12 months? Were you mainly...

[1] ○ Working at a job or business → Go to 92

[2] ○ Looking for work → Go to 91

[3] ○ A student
[4] ○ Retired
[5] ○ Keeping house
[6] ○ Other (specify) _____
→ Go to 96

91. Did you have a job at any time during the last 12 months?

[1] ○ Yes [2] ○ No → Go to 96

92. For whom do/did you work?

|_|_|_

107. **Aside from improving your health, was there any other reason that you decided to do this?**

[1] ○ Yes

[2] ○ No ——→ Go to 109

108. **What was the other reason?**

|_|_|_